KEMP'S RIDLEY (Lepidochelys kempi) DISTRIBUTION IN TEXAS: AN ATLAS

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INTRODUCTION

The Kemp's ridley (Lepidochelys kempi) sea turtle has a unique history that has been widely discussed by sea turtle biologists. It is the most endangered of the sea turtles and as far as we know it has the most restricted breeding range. The primary nesting site for the Kemp's ridley is located in eastern Mexico approximately 322 km (200 mi) south of the United States border, near the village of Rancho Nuevo in the state of Tamaulipas (Hildebrand, 1963). Scattered nesting occurs to the south and north along the Mexican coast and along the southern and central coastline of Texas (Pritchard and Marquez, 1973; Werler, 1951; Carr, 1961; Fuller, 1978; Francis, 1978; Hildebrand 1963,1980; Shaver, 1988). There is one record of a nesting Kemp's ridley on the west coast of Florida (Meylan et al., 1990). Outside the breeding area, the Kemp's ridley range includes other coastal areas of the Gulf of Mexico, the east coast of the U. S. from Florida to Maine and into Nova Scotia (Pritchard and Marquez, 1973; Bleakney, 1965), and the Eastern North Atlantic along the European coast from the British Isles, Netherlands and France (Brongersma, 1972; Manzella et al., 1988). Brongersma and Carr (1983) reported one record from Malta in the Mediterranean. Two records are reported from the Madeira Islands and Western Africa (Brongersma, 1972; Fontaine et al., 1989). Distribution data is easily shown by mapping it in an atlas form. This was the suggestion, in August 1989, by a Blue Ribbon panel that reviewed the Kemp's ridley head start experiment. A comparison of distributions of head started and wild Kemp's ridleys could be used to indicate how well head started animals adjust to the wild. The panel also suggested that a distribution atlas using all available Kemp's ridley data would be helpful to the sea turtle community. Developing an atlas encompassing all known records of Kemp's ridleys requires cooperation from all researchers that have data concerning Kemp's ridleys. The present atlas, illustrating the geographic, seasonal and size distributions of Kemp's ridleys in Texas waters, is preliminary and suggests a format for a more complete atlas that would map all known records of Kemp's ridleys.

METHODS

The atlas data cover the time period from the late 1940's through April 1990. Eight hundred sixty five records of Kemp's ridleys from six sources and from the literature have been combined into one data base. The most records, 506, were from the Sea Turtle Stranding and Salvage Network (STSSN) data base that is maintained at the NMFS Miami Laboratory. Records from four data bases maintained at the NMFS Galveston Laboratory contributed 297 records including 260 recaptures of head started ridleys and 38 turtles caught incidental to fishing, rehabilitated turtles and sightings of sea turtles. The sea turtle data base at the NMFS Laboratory in Pascagoula, MS, contributed 4 records and a thorough literature search contributed 57 records dating from the late 1940's through the 1980's, including 13 reports of nesting Kemp's ridleys. Only records that were positively identified as Kemp's ridley were used; each record was double checked so none were duplicated (i.e., strandings and literature). The coast of Texas was divided into eight sections, the boundaries of which were selected for clarity in plotting. From NE to SW the maps are as follows: Section 1 - Sabine Pass/High Island Area; Section 2 - Bolivar Peninsula/Galveston Area; Section 3 - Freeport/East Matagorda Bay; Section 4 - Matagorda Bay and Peninsula; Section 5 - San Antonio Bay/Copano Bay/Matagorda Island; Section 6 - Corpus Christi Bay/Northern Padre Island; Section

7 - Central Laguna Madre/Padre Island; Section 8 - Southern Laguna Madre/Padre Island. Most of the data fall within the map section boundaries. Data that occur outside the section boundaries will be shown on complete Texas maps. Four groups of turtles are identified throughout the atlas. Wild turtles are represented with a triangle, head started turtles with a square, historical records (pre-1980) with a circle and nesters with a diamond. The historical records are comprised of wild turtles. A separate category was created because no major data base for pre-1980 reports was available and the majority of these records are from early literature. Head start tag recaptures for 1978-1979 are not included in the historical records, but are in the head start recapture records. Nesters are also wild turtles, but any nesting report in Texas was important and needed to be identified. The symbols for each category will remain constant on all maps throughout the atlas. The symbols plotted on the maps represent approximate turtle locations. When data are collected on turtle strandings, tag recaptures, sightings and incidental catches the latitude and longitude are almost always estimated.

GEOGRAPHIC DISTRIBUTION

Geographic distribution is shown on nine maps, one for each section of coastline and one map for turtles that occur farther offshore and outside the section boundaries. The maps show the distribution of the 865 available Kemp's ridley records. Head started ridleys were more numerous in sections 2, 5 and 6. Sections 5 and 6 include the areas of major releases. Wild turtles were found more frequently in sections 1, 2 and 6. Historical records show wild turtles more frequently in sections 6 and 8, and reports of nestings were concentrated in central to south Texas in sections 6, 7 and 8. Kemp's ridleys were found mostly in the offshore habitats; however, both wild and head started turtles were found in inshore habitats of the Texas coast. Section 7, which includes the central Laguna Madre, is the only exception. No ridleys were recorded from this inshore area. In section 8, farther south in the Laguna Madre, there were only two historical records.

SEASONAL DISTRIBUTION

The completed atlas will have 36 seasonal distribution maps, nine per season, with 850 turtles plotted. Dates for 15 of the 865 records are unknown. Seasons were defined as follows: Winter (January, February, March), Spring (April, May, June), Summer (July, August, September), and Fall (October, November, December). Almost 44% (371) of the turtle records occurred during the Spring followed by Summer, Fall and Winter with 32.1% (273), 14.6% (124), and 9.7% (82) respectively.

SIZE DISTRIBUTION

Thirty six maps will show the size distributions of 546 Kemp's ridleys, nine maps for each of four size classes: less than 20 cm, 20-40 cm, 40-60 cm, and greater than 60 cm. All measurements are curved carapace lengths (CCL). CCL were chosen, because most of the records that had accurate measurements used this method. The records that had only straight carapace length (SCL) measurements were converted to CCL. The conversion was based on the regression of 144 pairs of SCL and CCL measurements in which CCL = 1.059407 x SCL. Almost 76% (412) of the turtles with accurate measurements fell into the 20-40 and 40-60 cm CCL range. The >60 cm range encompasses 18.5% (101), and 6% (33) of the turtles were <20 cm.

SUMMARY

The atlas form easily shows the distribution of Kemp's ridleys along the Texas coast and the sympatric distribution among the head started turtles and wild turtles. The Texas Atlas will contain 80 or more maps and will be published as a NOAA/NMFS Technical Memorandum. Similar atlases showing the distribution

of Kemp's ridleys throughout the United States would require cooperation of all researchers who have collected data on this species.

ACKNOWLEDGEMENTS

Texas Atlas Contributors: Wendy Teas, STSSN, NMFS Miami Laboratory; Sharon Manzella, Jo Williams and Marcel Duronslet, NMFS Galveston Laboratory; NMFS Pascagoula Laboratory; all STSSN participants. Special thanks go to Dr. Charles Caillouet, Jr. for his input in reviewing the manuscript, Mr. Larry Ogren and Dr. Terry Henwood for their suggestions and input and to Mr. Glen Machlan of the NOAA Library in Rockville, Maryland for helping with the literature search.

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